of index numbers in 1920 or in 1921 would give a more accurate indication of the rank of the several states. Of course, it may be stated in reply that the figures for 1918 show the conditions as they existed during that year.

In the summary, Dr. Ayres states that "in general the index number should be regarded as reliable rather than precise. Its methods are rigid and impartial, but not considerative nor interpretative. It measures results without considering causes. The purposes of the index number is to make it possible for state school systems to measure their progress from year to year, and to compare their attainments with those of their neighbors."

This book will certainly help to concentrate attention upon the importance of the ten items in the operation of state school systems, and will stimulate all those concerned with public education to increased effort. Dr. Ayres has done a valuable piece of work which will tend to benefit public education.

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Some Dangers in Establishing a Pension System and the Proper Precautions, by Edward L. Dodd. (University of Texas Bulletin, No. 1905.) 1919. Pp. 1 to 26.

In this monograph, Mr. Dodd takes as a model the pension system of the Teachers' Insurance and Annuity Association of America, organized by the Carnegie Foundation. He points out the leading features of this system and urges that the pension systems which some institutions might establish independently should be modeled after the pattern of the Teachers' Association.

Mr. Dodd lays down the following principles as the cardinal requirements of a pension system:

1. The pension must be paid out of a pension fund accumulated and administered in accordance with sound actuarial principles. It must not be paid by an institution out of the current salary budget.

2. This pension fund rightly belongs to the teachers who are to be the pensioners, because it is made up of portions of their salaries, the payments of which have been deferred to pension age. Mr. Dodd argues that if an institution did not maintain a pension system, it would be in a position to pay larger salaries to the teachers because the amounts paid out in pensions could be distributed among the teachers in the form of larger salaries.

3. Since the instructor pays for his pension, either in the form of direct contribution into the fund or in the form of a reduced salary because his institution maintains the pension fund, each instructor should be required to pay the cost of his own pension only and should not be taxed to bear part of the cost of the pension of the older men. In other words, each generation should pay for itself.

4. If the periodical contributions to the pension fund are invested at 4 per cent compound interest, the cost of the pension to each beneficiary will be cut in two, for the reason that at such compound interest rate, the annual contributions to the pension fund in the course of 30 or 35 years are approximately doubled by the interest earnings. Therefore, if an institution pays pensions out of the current salary budget and not out of a reserve fund specifically created for

that purpose, the amount available for the payment of the salaries of the active instructors is diminished by approximately double the sum that would be required if pensions were paid out of a pension fund, where provision has been made for interest earnings.

5. If an instructor leaves the institution before pensions are payable, his interest in the pension fund should not be forfeited.

6. If he dies before the pension age, then the reserve accumulated to his credit in the pension fund, both principal and accrued interest, should be paid over to his family. The Tontine feature must not be employed in deferred pension systems.

7. The pension fund must be administered in accordance with the actuarial principle that the reserve must at all times be equal to the present value of the future pension obligations.

8. Where a pension system is in vogue, the pension should not be regarded as a future expense, but immediate provision must be made for these future obligations, and the reserve should be carried as a liability of the institution.

The big problem, of course, that confronts any institution that would establish a pension reserve fund, centers around the older teachers, who are near pension age, and for whose pensions special provision must be made in the pension fund. As a general principle, Mr. Dodd suggests that in order to establish a pension fund, an institution should declare a general increase in salaries, which increase is to be paid not directly to the teachers, but set aside for them into the pension fund. This increase is to be made retroactive in accordance with the length of service of the teaching staff, and a certain rate of compound interest is to be allowed on this retroactive increase, so as to bring the fund up-to-date. In this retroactive increase, account should be taken of the past rates of salary increases and also of the rate of increase in cost of living. But where this retroactive increase is to come from, Mr. Dodd does not state.

Mr. Dodd has treated his subject ably, and his pamphlet is well worth the study of college and other executives who are confronted with the pension problem. There is an interesting fallacy, however, in Mr. Dodd's reasoning. He assumes that each institution maintains a wage or salary fund for its teaching staff. This may be true where colleges pay their teachers' salaries out of the proceeds of special endowment funds. In such cases it may be presumed that the salaries are paid out of the proceeds or earnings derived from the endowment fund. But it does not necessarily follow that the pensions are paid at the expense of the active teaching staff, if an institution pays pensions out of the current salary budget. A simple change in bookkeeping would effect a division of the salary endowment fund into two parts, the income from one part to be applied to the payment of salaries, and the income from the other part to be applied to the payment of pensions. Thus, the payment of pensions out of a current salary budget may well be regarded as being made out of a pension fund. Such a system, however, makes no provision for teachers who leave the service of the institution. In this contention, Mr. Dodd will meet with unanimity of opinion among the teaching staffs.

Is not the following compromise solution feasible:

1. That when a college establishes a pension fund, all instructors should make contributions into this fund on the basis of age twenty-eight, which is the average age of an instructor on appointment.

2. As to the instructors who are between the ages of twenty-eight and fifty-five at the time of the institution of the pension system, the college should pay into the pension fund on their behalf the difference between the rate at their attained age and age twenty-eight.

3. This pension fund should not seek to provide for the pensions of instructors who are over fifty-five at the time the system is instituted. But when they reach the age of retirement, their pension should be paid out of the general salary fund of the institution. They should, however, contribute to this salary fund, the basic annual rates obtaining for age twenty-eight.

It would seem that the difficulties in the way of inaugurating a pension system on this basis should not be nearly so great as the practical difficulty of declaring a retroactive salary increase with compound interest over a number of years.

This suggestion is frankly a compromise, which may more readily solve in a simple manner some of the perplexing problems that arise in connection with the establishment of a pension fund system by any institution. In time, of course, as the older men die and the younger men who have been started correctly on the pension fund basis grow old, the fund will take care of all the pension requirements of the staff of the institution, whether the fund is administered by the institution directly or by an insurance company.

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